DECISION
AND
FINDING OF NO SIGNIFICANT IMPACT

Management of Feral and Free-Ranging Patas and Rhesus Monkey Populations to Reduce Threats to Human Health and Safety, Agriculture, Nuisances, and Impacts to Native Wildlife Species In the Commonwealth of Puerto Rico

The U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Wildlife Services (WS) program responds to requests for assistance from individuals, organizations and agencies experiencing damage caused by wildlife in Puerto Rico. APHIS procedures for implementing the National Environmental Policy Act (NEPA) allows for the categorical exclusion of individual wildlife damage management actions (7 CFR 372.5(c), 60 Fed. Reg. 6000-6003, 1995). However, to address WS involvement in this proposed action an environmental assessment (EA) was prepared to evaluate and determine if any potentially significant impacts to the human environment from the planned and proposed program would occur; to facilitate planning, interagency coordination, and the streamlining of program management; and to clearly communicate with the public the analysis of cumulative impacts. The pre-decisional EA released by WS on January 25, 2005, documented the need for managing feral and free-ranging patas and rhesus monkey populations to reduce threats to human health and safety, agriculture damage, nuisances, and impacts to native wildlife species in the Commonwealth of Puerto Rico and assessed potential impacts of various alternatives for responding to these types of requests for assistance. Comments from the public involvement process were reviewed for substantial issues and alternatives which were considered in developing this decision.

WS uses an Integrated Wildlife Damage Management (IWDM) approach, commonly known as Integrated Pest Management (WS Directive 2.105) in which a combination of methods may be used or recommended to reduce damage. WS wildlife damage management is not based on punishing offending animals but as one means of reducing damage and is used as part of the WS Decision Model (Slate et al. 1992, USDA 1997, WS Directive 2.201). WS's proposed action is to implement an IWDM program on public and private lands in the Commonwealth of Puerto Rico. Direct control assistance will only take place after a request for services has been received and where permission has been granted by private landowner or government manager. All WS wildlife damage management activities are in compliance with relevant laws, regulations, policies, orders and procedures, including the Endangered Species Act of 1973.

Consistency

The analyses in the EA demonstrate that Alternative 5: 1) best addresses the issues identified in the EA, 2) provides safeguards for public health and safety, 3) provides WS the best opportunity to reduce damage and conflicts while providing low impacts on non-target species, 4) balances the economic effects to agricultural and natural resources, and property, and 5) allows WS to meet its obligations to government agencies or other entities.

Monitoring

The WS program will annually review its impacts on those wildlife species addressed in the EA to ensure that WS program activities do not impact the viability of native wildlife species. In addition, the EA will be reviewed each year to ensure that it and the analysis are sufficient.

Public Involvement

The pre-decisional EA was prepared and released to the public for a 30-day comment period by a legal notice in the *San Juan Star Newspaper* on January 25, 2005. The pre-decisional EA was also mailed directly to agencies, organizations, and individuals with probable interest in the proposed program. Four requests were made for copies of the pre-decisional EA during the 30-day comment period. One Freedom of Information Act request, from Dr. Janis Gonzalez-Martinez of the Caribbean Primate Research Center in Puerto Rico, was made prior to the 30-day comment period. Three comment letters were received by WS within the said comment period; two of the letters were from individuals involved with the Caribbean Primate Research Center in Puerto Rico. All comments were analyzed to identify substantial new issues, alternatives, or to re-direct the program. Responses to specific comments are included in Appendix A. All letters are maintained in the administrative file located at the Wildlife Services State Office in Gainesville, Florida.

Affected Environment

The areas of the proposed action include urban and rural areas where feral and free-ranging patas and rhesus monkeys are of concern to landowners, city managers, and/or resource managers. Control areas may include federal, state, county, city, private, or other lands, where WS assistance has been requested by a landowner or manager to control feral and free-ranging monkeys to protect human health and safety, agriculture, alleviate nuisance issues, and reduce impacts to wildlife species. The control areas would also include property in or adjacent to identified sites where feral and free-ranging patas and rhesus monkey activities pose a threat to human health and safety. Feral and free-ranging monkey damage control would be conducted when requested by a landowner or manager, and only on properties with a Cooperative Agreement with Wildlife Services.

Objectives

The objectives of the proposed action are to:

1) Respond to 100% of the requests for assistance with the appropriate action (technical assistance or direct control) as determined by Florida/Puerto Rico WS personnel, applying the WS Decision Model (Slate et al. 1992).

2) Reduce and eliminate feral and free-ranging patas and rhesus monkey populations to the greatest extent possible, on properties with a federal WS operational program.

3) Reduce or eliminate human health and safety and nuisance issues concerning feral and free-ranging patas and rhesus monkeys to the greatest extent possible, on properties with a federal WS operational program.

4) Reduce or eliminate the impact of feral and free-ranging patas and rhesus monkeys on native wildlife species and agriculture, on properties with a federal WS operational program.

5) Maintain the lethal take of nontarget animals by WS personnel during damage management to less than 1% of the total animals taken.

Major Issues
Several major issues were contained in scope of this EA. These issues were consolidated into the following 6 primary issues to be considered in detail:

1) Effects of Feral and Free-Ranging Patas and Rhesus Monkeys on Human Health and Safety, Agriculture, Nuisance, and Native Wildlife

2) Effects on Target Species Populations

3) Effects of Control Methods on Nontarget Species Populations, Including T&E Species

4) Humaneness of Control Methods

5) Effects of Control Methods on Human Health and Safety

6) Effects on the Aesthetic Values of Targeted Species and Protected T&E Species

Alternatives Analyzed in Detail
Five potential alternatives were developed to address the issues identified above. A detailed discussion of the anticipated effects of the alternatives on the objectives and issues are contained in the EA. The following summary provides a brief description of each alternative. A complete description of the alternatives can be found in Chapter 3 of the EA.

Alternative 1 - No Action - This alternative precludes any and all wildlife damage management activities by WS to protect human health and safety, protect agricultural resources, alleviate nuisance issues, and protect native wildlife species from impacts associated with feral and free-ranging patas and rhesus monkey populations in the Commonwealth of Puerto Rico.

Alternative 2 - Nonlethal Control Before Lethal Control - This alternative would not allow the use of lethal control by WS until all available nonlethal methods had been applied and determined to be inadequate in each damage situation.

Alternative 3 - Nonlethal Control Only - This alternative would involve the use of nonlethal management techniques only by WS.

Alternative 4 - Lethal Control Only - This alternative would involve the use of lethal management techniques only by WS.

Alternative 5 - Integrated Wildlife Damage Management (the Proposed Action) - This alternative would incorporate an integrated approach to wildlife damage management using components of the wildlife damage management techniques and methods addressed in Alternatives 3 and 4, as deemed appropriate by WS and other participating entities.

Alternatives Considered but not Analyzed in Detail with Rationale

Trap, Sterilize, and Release (TSR) Alternative

This topic has undergone considerable debate in animal welfare and scientific communities for a number of years. Two main questions or viewpoints dominate this debate: 1) Does trap-sterilize-release work in controlling feral or free-ranging animal populations over the long run or even the short run? and 2) Does TSR programs address or alleviate problems (i.e., diseases, predation, agricultural damage, nuisance) created by feral or free-ranging animal populations?

Theoretically, trap, sterilize, and release would work if all animals of one sex or both were sterilized. However, in nature the probability of controlling an exotic or nonnative species in the wild with this technique is not currently reasonable, especially with the animals being self-sufficient and not relying on human handouts to survive. Additionally, it is common knowledge within the trapping community, that there are always individuals within a population that are trap shy. Capturing or removing trap shy individuals often requires implementing other methods.

As a result of the prevalent and indeterminate threat to human health and safety created by TSR programs (patas and rhesus monkeys colonies) and the continued threat to threatened and endangered wildlife and native wildlife in general, WS will not consider this issue further or be a participant of any TSR program in Puerto Rico.

Live Capture for Sale to Zoos, Nature Parks, Private Individuals, or Primate Medical Research Facilities Alternative

Capturing wildlife, exotic species, or any animal for sale or for profit is not allowed in the WS Directives, and to provide animals for sale is neither ethical nor sound wildlife management. Additionally, more than 70% of free-ranging rhesus (72% of 57 monkeys) sampled in Puerto Rico in 1997 were positive for *Cercopithecine herpesviros* 1 antibodies (Gonzalez-Martinez et al. 2002).

Several attempts have been made to control patas and rhesus numbers via live-capture in southwestern Puerto Rico. Between 1979 and 1985, Primate Reclamation's of Puerto Rico captured 128 rhesus and 35 patas monkeys. The Wildlife Control Society captured 40 rhesus and 4 patas monkeys (1988-1989). And the Caribbean Primate Research Center/University of Puerto Rico removed 14 patas monkeys during an unidentified time period. Over a 10-year period using live-capture techniques, the monkey problem still persists in Puerto Rico and has most likely expanded in scope (Gonzalez-Martinez 1995).

Trap and Relocate Back into the Wild Alternative

This alternative would allow the live capture of feral and free-ranging patas and rhesus monkeys using walk-in traps, drop-nets, cannon nets, snares, and/or leghold traps. Captured animals

would be tranquilized and translocated to other areas where they would be released back into the wild or free living state.

Relocation of wildlife is often viewed as inhumane and biologically unsound management, especially when the wildlife species being relocated is exotic, nonnative, nuisance, and considered a human health and safety threat. Consequently, WS will not relocate any feral and free-ranging patas and rhesus monkeys captured during control operations back into the wild. If certain segments of the public demand relocation, then it will be up to that group(s) to acquire the appropriate permits and/or homes for the monkeys.

Frightening Devices Alternative

Frightening devices such as electronic guards, pyrotechnics, propane cannons, and lights can be used to temporarily alleviate some animals' activity. The effectiveness of these devices depends upon the individual animal's fear of, and subsequent aversion to the offensive stimuli. Once an animal habituates to these stimuli, it often resumes its normal activities and movements.

The continuous and prolonged utilization of artificial lighting along some locations could have negative impacts on certain wildlife species. One well documented problem has been with beach habitats and nesting sea turtles and shorebirds. The use of artificial lighting may deter female sea turtles (Witherington and Martin 1996) and shorebirds, discouraging them from nesting at historic nesting sites. In addition, newly hatched sea turtles are strongly attracted to light sources (Raymond 1984, Witherington 1995, Witherington 1991). This disorientation could lead to increased mortality due to predation, dehydration, and exhaustion. Lights could also inhibit the foraging behavior of other nocturnal species. Additionally, artificial lights will not alter long-term patas and rhesus monkeys behavior by disrupting movement or causing avoidance of illuminated sites in urban areas. Most feeding by patas and rhesus monkeys is diurnal.

The impact of noise resulting from the use of electronic guards, pyrotechnics, and propane exploders would not be allowed in an urban setting for extended periods of time. There is little evidence to suggest that such frightening techniques would cause patas and rhesus monkeys to avoid an area. Noise associated with the above devices, potentially could impact both the humans and native wildlife proposed for protection in this EA.

Biological Control Alternative

Biological control is most commonly used to control select evasive plant and insect species. Very little effort has been devoted to the biological control of feral and free-ranging primates for two reasons: 1) there has not been any biological control agent developed that will work on feral and free-ranging monkey populations only and not potentially effect monkeys kept indoors or at research facilities and 2) it is not known how any potential biological control agents for monkeys would effect humans or other species (Dobson 1988).

Poisoning Alternative

Historically, poisoning has been a common practice in controlling many nuisance wildlife populations. It was common for both target and non-target species to be negatively impacted by broad scale poisoning campaigns. The use of select toxicants have proven effective at removing

select exotic or feral animals on some island situations in New Zealand (Eason, C. T., D. R. Morgan, and B. K. Clapperton 1992) and poisoning is still commonly used to control some nuisance species in the United States (i.e., rodents, starlings, etc.). However, due to concerns associated with poisoning, Wildlife Services will not incorporate poisoning into its integrated wildlife damage management program in Puerto Rico for controlling feral and free-ranging patas and rhesus monkeys.

Finding of No Significant Impact

The analysis in the EA indicates that there will not be a significant impact, individually or cumulatively, on the quality of the human environment as a result of this proposed action. I agree with this conclusion and, therefore, find that an EIS need not be prepared. This determination is based on the following factors:

1) Feral and free-ranging patas and rhesus monkey damage management as conducted by WS in the Commonwealth of Puerto Rico is not regional or national in scope.

2) The proposed action would pose minimal risks to public health and safety. Risks to the public from WS methods were determined to be low in a formal risk assessment (USDA 1997, Appendix P).

3) There are no unique characteristics such as park lands, prime farm lands, wetlands, wild and scenic areas, or ecologically critical areas that would be significantly affected. Built-in mitigation measures that are part of WS's standard operating procedures and adherence to laws and regulations will further ensure that WS activities do not harm the environment.

4) The effects on the quality of the human environment are not highly controversial. Although certain individuals may be opposed to managing feral and free-ranging patas and rhesus monkey populations, this action is not highly controversial in relation to size, nature, or effects.

5) Based on the analysis documented in the EA and the accompanying administrative file, the effects of the proposed damage management program on the human environment would not be significant. The effects of the proposed activities are not highly uncertain and do not involve unique or unknown risks.

6) The proposed action does not establish a precedent for future actions that would have a significant effect.

7) No significant cumulative effects were identified through this assessment. The number of feral and free-ranging patas and rhesus monkeys that will be taken by WS annually will not affect native patas and rhesus monkey populations in Africa or Asia (respectively). Puerto Rico is not in the native range of the 2 monkey species. Selling of patas or rhesus monkeys in Puerto Rico is illegal; therefore, no legal market for these monkeys exists. The EA discussed cumulative effects of WS on target and non-target species populations

and concluded that such impacts were not significant for this or other anticipated actions to be implemented or planned within the Commonwealth of Puerto Rico.

8) The proposed action would not affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places and will not cause loss or destruction of significant scientific, cultural, or historic resources.

9) WS determined that the proposed project would not adversely affect Federal or Puerto Rican government listed threatened and endangered species in the Commonwealth of Puerto Rico. This determination was concurred by the Puerto Rican government and the United States Fish and Wildlife Service.

10) The proposed action would be in compliance with all federal, state and local laws.

Decision and Rational

I have carefully reviewed the EA prepared for this proposal and the input from the public involvement process. I believe that the issues identified in the EA are best addressed by selecting Alternative 5 (*Integrated Wildlife Damage Management - Proposed Action*) and applying the associated mitigation measures discussed in Chapter 3 of the EA. Alternative 5 is selected because (1) it offers the greatest chance at maximizing effectiveness and benefits to resource owners and managers while minimizing cumulative impacts on the quality of the human environment that might result from the program's effect on target and non-target species populations; (2) it presents the greatest chance of maximizing net benefits while minimizing adverse impacts to public health and safety; and, (3) it offers a balanced approach to the issues of humaneness and aesthetics when all facets of these issues are considered. The comments identified from public involvement were minor and did not change the analysis. Therefore, it is my decision to implement the proposed action as described in the EA.

Copies of the EA are available upon request from the USDA, APHIS, WS, 2820 East University Avenue, Gainesville, FL 32641.

Charles S. Brown, Regional Director
USDA-APHIS-WS Eastern Region

4/5/05
Date

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Appendix A

Response to Comments to the Environmental Assessment
"Management of Feral and Free-Ranging Patas and Rhesus Monkey Populations
to Reduce Threats to Human Health and Safety, Agriculture,
Nuisances, and Impacts to Native Wildlife Species
In the Commonwealth of Puerto Rico"

Issue 1: It was requested that any reference to the research facility, Cayo Santiago, be removed from the Environmental Assessment.

Program Response 1: As discussed in the published scientific literature referenced in the EA (Section 1.1 – Need for Action), Cayo Santiago is an important component to the existence of monkeys on the main Puerto Rican island. Cayo Santiago is referenced for two reasons: 1) scientific information and 2) it is a satellite island of Puerto Rico that maintains a population of rhesus monkeys. The inclusion of this information provides the decision maker with the necessary background information to make an informed decision on the proposed management program.

Issue 2: The Environmental Assessment falsely assumes that the Puerto Rico Department of Natural and Environmental Resources is the administrating entity for Cayo Santiago. Monkey damage management activities should not be allowed on Cayo Santiago without land owner permission.

Program Response 2: Nothing in the EA refers to the ownership of the island being under the Puerto Rico Department of Environmental and Natural Resources nor does the EA make any assumptions of jurisdiction. The EA does not dispute the fact that the island of Cayo Santiago is owned by the University of Puerto Rico. However, the island is included in the affected environment to cover any change in ownership that might require the services of WS at a later date (i.e. Desecheo was transferred from NIH to the U.S. Fish and Wildlife Service; Vieques was relinquished by the U.S. Navy to the Commonwealth of Puerto Rico). Its inclusion into the EA does not reflect jurisdiction, ownership, or the intent to perform monkey control. As clearly stated in the EA (Section 1.2 - Wildlife Services Objectives – Puerto Rico; Section 2.1 - Affected Environment; Chapter 1 - Introduction) no control work will be performed by USDA, APHIS, WS unless the property owner enters into a federal cooperative agreement with USDA, APHIS, WS. Therefore, the land owner retains full decision making authority as to whether or not damage management activities take place on their property.

Issue 3: The EA fails to demonstrate the existence of significant threats to human health and safety posed by the monkeys in southwestern Puerto Rico.

Program Response 3: WS discussion of potential disease risks is not overstated and is presented to inform the decision maker of the types of human health and safety threats for which WS assistance may be requested. The EA provides the best information currently available. The

information was ascertained from researchers in Puerto Rico as well as other locations globally that have had or are currently experiencing similar issues with exotic and native monkeys.

The EA was developed in conjunction with the Department of Environmental and Natural Resources (DNER) to proactively identify human health and safety problems that have occurred elsewhere or may occur in Puerto Rico because of primate/human interactions. This EA provides the framework for dealing with monkey issues in Puerto Rico. This issue is addressed in greater detail in Chapter 1 of the EA (Section 1.1.1 - Need for Feral and Free-ranging Patus and Rhesus Monkey Management to Protect Human Health and Safety).

Issue 4: The EA does not provide scientific evidence that the monkeys are negatively impacting native wildlife populations.

Program Response 4: WS discussion of potential monkey impacts to native wildlife is presented to inform the decision maker of the types of natural resources damage for which WS assistance may be requested. There is solid evidence that non-native monkeys impact some native wildlife species and populations. Much of this information has been presented in detail in the EA (Section 1.1.2 - Need for Feral and Free-Ranging Patas and Rhesus Monkey Management to Protect Wildlife and Agriculture). It is important to note that professional wildlife biologists with the DNER and United States Fish and Wildlife Service agree that monkeys are impacting native wildlife in southwestern Puerto Rico (Lopez-Ortiz, DNER, per. Comm., 2004; Muniz, USFWS, per. Comm., 2005). To what degree the monkeys are or may impact the island is not clear. However, wildlife biologists are confident that free-ranging monkeys will have effects on Puerto Rico that can not be visualized.

Issue 5: The evidence presented in the EA of monkey nuisances in Puerto Rico is minimal and anecdotal at best.

Program Response 5: As stated in the EA (Section 1.1.3 - Need for Feral and Free-Ranging Patas and Rhesus Monkey Management to Reduce Potential Nuisance Issues), it is true that evidence documenting nuisance issues is limited for Puerto Rico. However, WS discussion of potential monkey nuisances is not overstated and is presented to inform the decision maker of the types of nusiance situations for which WS assistance may be requested. Nuisance issues are well documented in India, Pakistan, Thailand, Indonesia, etc. Therefore, it is conceivable that if proactive measures are not taken by the Puerto Rican government, the monkeys in Puerto Rico will develop to an unknown level of nuisance. It has been suggested by primatologist that problems will most likely increase as monkey densities increase; particularly, as the monkeys increase contact with humans (Gonzalez-Martinez 1995). Therefore, the Puerto Rican government is taking a proactive approach to dealing with current and potential issues involving monkey/human interactions.

Issue 6: The EA does not accurately evaluate agricultural damage caused by monkeys in southwestern Puerto Rico.

Program Response 6: WS discussion of potential monkey impacts to agricultural resources is presented to inform the decision maker of the types of agricultural damage for which WS assistance may be requested. Unpublished data indicate that monkeys cause damage to cantaloupes, watermelons, pumpkins, and vegetables in Southwest Puerto Rico (Lopez-Ortiz, per. Comm., 2004). As presented in the EA (Section 1.1.2 - Need for Feral and Free-Ranging Patas and Rhesus Monkey Management to Protect Wildlife and Agriculture), the best information available indicates at least $20,000 annual losses are incurred from monkey damage to crops in Puerto Rico. This monetary loss is most likely underestimated, but is a figure used by primatologist and resource managers in Puerto Rico showing monkeys are impacts agriculture resources in Puerto Rico.

Issue 7: The methods proposed by the agency that include pursuit, shooting and harrassment will very likely cause the dispersal of the monkey populations to other areas, thus worsening the problem.

Program Response 7: This comment clearly acknowledges that monkeys are causing problems in Puerto Rico and that management actions that harass or move monkeys will likely cause problems with monkeys elsewhere. As stated in the EA (Section 3.2.4 – Frightening Devices Alternative), WS does not condone the use of frightening devices (harassment) to effectively alleviate monkey damage and conflicts. Additionally, as presented in the EA (Section 1.1 – Need for Action) it has already been documented that both species of monkey are naturally expanding their ranges. The Puerto Rico DNER finds it unacceptable to allow the situation to progressively worsen by doing nothing or condoning methods that are not going to resolve problems.

When lethal management methods described in the EA are applied in a planned, professional, and methodical manner, the likelihood of monkeys dispersing to unaffected areas should be limited. WS will not apply methods in a way to worsen a situation or hasten monkey dispersal, but will apply methods in the most effective and practical manner possible. WS utilizes the best and most advanced equipment available to resolve conflict issues. Much of the equipment used by WS is not available to the general public in Puerto Rico and for this reason an evaluation of equipment or methods can not be adequately conducted by an uniformed source. Therefore, to say that WS does not have the resources available to adequately address this issue is inaccurate.

Issue 8: Based on previous failures with controlling rhesus monkeys on Desecheo Island and the green monkey on Barbados, it is unlikely that this program will eradicate the monkeys in Southwest Puerto Rico.

Program Response 8: There are several possible reasons for past failures in controlling non-native monkey populations. One possible reason for failed control of green monkeys in Barbados might be the fact that the green monkey has been present on Barbados for several hundred years (Denham 1987) and that the green monkey has probably invaded most available niches on this island. Conversely, the patas and rhesus monkeys have been free-ranging in Puerto Rico for 3-4 decades and are thought to be confined to the southwestern part of the island. Failures associated with the rhesus monkey control operations in Desecheo were associated with political pressure and not the efficacy of lethal control methods. Therefore, it is erroneous to conclude that

controlling and/or eradicating the patas monkey or the rhesus monkey in southwestern Puerto Rico is unlikely.

Issue 9: The control methods described in the EA present a high likelihood to cause harm to livestock, pets, and humans.

Program Response 9: There is no real evidence that would substantiate the idea that any of the control techniques identified in the EA (Section 3.1 – Description of Alternatives) would cause harm to livestock, pets, or humans when used properly and professionally. This issue is addressed in detail in Chapter 4 of the EA (Section 4.1.5 - Effects of Control Methods on Human Health and Safety; Section 4.1.3 - Effects of Control Methods on Nontarget Species Populations, Including T&E Species). It is important to note that the likelihood of adverse impacts to livestock, pets, and humans could increase if these devices are not used and applied by properly trained professionals. As stated in the EA (Section 3.3 – Mitigation and SOP's for Wildlife Damage Management Techniques), WS employees are trained in the safe, effective, and efficient use of control methods and use control methods in such a manner that minimizes potential impacts to non-target species and people.

Issue 10: USDA, APHIS, WS and the Department of Environmental and Natural Resource have no expertise in controlling monkey damage.

Program Response 10: The DNER is not a wildlife damage management agency; therefore DNER has contacted the USDA, APHIS, WS (an agency with extensive, multi-species damage control experience) to assist in the development of an effective management strategy to control monkey damage and conflicts in Puerto Rico. USDA, APHIS, WS has experience working with monkeys on Desecheo Island and deals with a diversity of damage management issues in Puerto Rico and the United States mainland. USDA, APHIS, WS is directed by law to protect American agriculture and other resources from damage associated with wildlife. Wildlife Services' mission, developed through its strategic planning process, is: 1) to provide leadership in wildlife damage management for the protection of American agriculture, endangered and threatened species, and natural resources and 2) to safeguard public health and safety. The assertion that WS does not have the expertise to develop an EA or sound management plan to control, if not eradicate the patas and rhesus monkeys is unfounded.

Issue 11: Captured and deceased monkeys would present more of a biohazard than free-roaming monkeys from potential exposures to people that may come in contact with these animals. Human exposure would be higher than before in densely populated rural areas.

Program Response 11: All practical and reasonable precautionary measures will be taken to avoid any public or control agent exposure to trapped or deceased monkeys.

To reduce potential exposure to infected monkey carcasses, all carcasses will be handled and disposed of in accordance to the Puerto Rican Health Department and/or Centers for Disease Control (CDC) guidelines. This would involve disposal via burial or incineration. It is important to note that the B-virus is not a blood-borne pathogen, therefore, is not transmitted to humans or

primates through blood (Jensen et al. 2004). Transmission generally is through other bodily fluids (e.g., saliva). Additionally, if the animal is not shedding the virus before being euthanized, the likelihood of the animal becoming infectious following death is unlikely. However, to reduce any potential human exposure to the virus, all rhesus monkeys will be handled as though the animals were positive for the B-virus.

When conducting management actions that include the capturing and restraining of monkeys, WS will conduct actions in such a manner to minimize potential interactions with people. Most trapping will be conducted away from areas of high human activity and when determined necessary, signs will be placed to warn the public of any potential hazards. In most situations, trap locations will not be made know to the general public and when necessary, areas where trapping or control operations are being conducted will be closed to the public.

Issue 12: The Caribbean Primate Research Center since 1995 has presented several alternatives to the local agencies mentioned for dealing with monkey populations and all have been based on scientific evidence and procedures.

Program Response 12: The Caribbean Primate Research Center (CPRC) has presented several alternatives to the Puerto Rican government for dealing with the monkey damage to crops. In September 1995, the CPRC submitted a document to address the monkey/agriculture issues in Puerto Rico, - *Development of a Program to Mitigate Crop Damage by Monkeys and to Contain and Monitor Their Populations*. The methods recommended included fencing, guard dogs (acquired from local pounds), live capture and resale, trap and removal of certain age classes and sexes (to reduce reproduction), trap and sterilization, and reproductive contraceptives. However, none of these methods presented would do anything to alleviate the monkey issues in Puerto Rico over the long-term. It is doubtful that any of these methods would provide much in the way of temporary relief to farmers. No real alternatives were proposed to reduce impacts to the natural resources, human health and safety, or the spread of feral and free-ranging monkeys across the island. Most of the methods proposed were for the patas monkeys in agrarian areas and not the rhesus monkey. The patas monkey is more habitat specific than the rhesus, therefore, the likelihood of this species saturating the island is remote in comparison to the rhesus. Many of the methods and techniques proposed by CPRC were considered in the development of the EA (Section 3.1 – Description of the Alternatives; Section 3.2 – Alternatives Considered But Not Analyzed in Detail With Rationale).

Issue 13: The population estimates offered by WS and the DNER are assumptions that need to be scientifically confirmed.

Program Response 13: As presented in the EA (Section 1.1 – Need for Action), the population estimates provided by the DNER were generated using a scientific population growth model. The parameters that were entered in regards to age, life span, reproductive rate, mortality rate, etc. originated from scientific reports generated by primatologists on Cayo Santiago. The number generated from models are not 100% accurate, however, they are the best estimates available at this time. The purpose of this EA was not to perform field studies to ascertain the

exact number of free-ranging monkeys, but to evaluate the information currently available and make sound wildlife management decisions based on this information.

Issue 14: It is surprising that the Agency did not consider coordinating the removal of rhesus macaques with the CPRC. For over 30 years the CPRC has been providing an invaluable service to the national and international scientific community by providing Indian-origin rhesus macaques for the use in studies for numerous diseases that inflict humans. Rhesus monkeys should be live captured and provided to the CPRC for research purposes.

Program Response 14: All literature available from the CPRC was reviewed during the preparation of this EA and offered no real solutions to the current feral and free-ranging monkey problem. Objectives of the CPRC have not and are not the eradication of the 2 monkey species from Puerto Rico. As early as the 1960's the National Institute of Health (NIH) was aware that both the patas and rhesus monkeys stocked for the Parguera Primate Breeding Colony were escaping to the mainland. In the 1970's, with the establishment of the Caribbean Primate Research Center, the CPRC was also aware that monkeys were escaping to the mainland. The NIH and CPRC have had more than 3 decades to remove or eradicate monkeys from the Puerto Rican mainland in any fashion they chose. Unfortunately, the primate researchers have not come close to eradicating or removing all the patas and rhesus monkeys from southwestern Puerto Rico or the Island of Desecheo.

Furthermore, as discussed in the EA (Section 3.2.2 - Live Capture for Sale to Zoos, Nature Parks, Private Individuals, or Primate Medical Research Facilities Alternative), several attempts have been made to control patas and rhesus numbers via live-capture in southwestern Puerto Rico. Between 1979 and 1985, Primate Reclamation's of Puerto Rico captured 128 rhesus and 35 patas monkeys; the Wildlife Control Society captured 40 rhesus and 4 patas monkeys (1988-1989); and the Caribbean Primate Research Center/University of Puerto Rico removed 14 patas monkeys during an unidentified time period. Over a 10-year period using live-capture techniques, the monkey problem still persists in Puerto Rico and has most likely expanded in scope (Gonzalez-Martinez 1995).

Issue 15: Why not allow hunting to control the monkeys in Southwest Puerto Rico?

Program Response 15: There are several reasons for not allowing hunting or shooting, by the general public, as a method of controlling the monkey issues in Puerto Rico. The main reasons are legal, safety, humaneness, objectives, efficacy, and the need to monitor the efficacy of the control methods.

Hunting as a tool in itself will not resolve the monkey issue in Puerto Rico. The objective of most hunters is for sport or meat/fur and does not focus on the issue of removing non-native monkeys from the ecosystem. Unless there is enough monetary incentive, hunters will not likely hunt the monkeys to extinction and will only cause the populations to disperse more quickly. Hunting would most likely create warier animals and make control more difficult.

The firearms needed to be effective are not available to the public and require a permit from the Puerto Rican government. The safety of the public and shooter is of utmost importance and the ability to control the level of safety required to operate in various environments is not available through public hunting. Hunting/shooting monkeys causing agricultural damage is a common practice employed by farmers on other Caribbean Islands, Africa, and Asia. However, shooting alone only provides temporary relief from depredation; and does not completely resolve the issue of crop damage.

Issue 16: The Agency's use of the term "feral" is incorrect as applied to monkeys. Monkeys are not domesticated animals.

Program Response 16: To respond to this question logically, the word domesticate must be defined. The *American Heritage College Dictionary* (American Heritage 2000) defines domesticate as the following:

> **1.** To make comfortable at home; make domestic. **2.** To adopt or fit for domestic use or life. **3.a.** To train or adapt (an animal or a plant) to live with and be of use to human beings. **b.** To introduce and accustom (an animal or a plant) into another region: naturalized....

Therefore, domesticated is the state of being made domestic.

The *American Heritage College Dictionary* (American Heritage 2000) defines feral as:

> **1.a.** Existing in a wild or untamed state. **b.** Having returned to an untamed state from domestication. **2.** Of or suggestive of a wild animal; savage [<Latin. *Fera*, wild animal, <*ferus*, wild].

As used in this EA, "feral" will apply to any and all monkeys that are no longer in a household. Free-ranging monkeys would be defined as animals that were fed or sheltered by humans, but did not live with humans or as animals that are not native to an area, but are able to move freely within that environment. Domesticated would classify individual monkeys that were living in a household, but not a species. Zoo-housed animals would be considered confined. This EA is not concerned with animals that reside legally in a home, research facility (center), zoo, or animal park.

There are numerous cultures throughout the world that have domesticated monkeys to live in human households. The broad group, "monkey", includes many species, and as species they have not been domesticated. However, there are individuals animals within species that have been "domesticated". Therefore, when animals are kept in a household and are returned to the wild, the animal can be classified as "feral." On the other hand, if an animal resides in a zoo, research facility (center), or animal park and does not live in a household, it would be classified as captive. If an animal escapes from a zoo, research facility (center), or animal park and is allowed to live in the wild, it would be classified as free-ranging. Free-ranging has nothing to do with the state of domestication, but the ability of an animal to move freely through its environments.

Issue 17: ***The economic threshold of losses for conducting management has not been reached. The proposed control program is not cost effective.***

Program Response 17: The Council on Environmental Quality (CEQ) regulations (40 CFR 1502.23) do not require a formal, monetized cost benefit analysis to comply with NEPA. Consideration of this issue is not essential to making a reasoned choice among the alternative being considered. The WS EIS, Appendix L, p. 32 (USDA 1997) stated:

> *"Cost effectiveness is not, nor should it be, the primary goal of the APHIS ADC (WS) program. Additional constraints, such as environmental protection, land management goals, and others, are considered whenever a request for assistance is received. These constraints increase the cost of the program while not necessarily increasing its effectiveness, yet they are a vital part of the APHIS ADC (WS) program".*

As stated in the EA (Section 2.3.2 - Cost Effectiveness of Control Methods), the methods determined to be most effective in controlling feral and free-ranging patas and rhesus monkey damage and proven to be most cost effective will receive the greatest application. Additionally, control operations may be constrained by cooperator monies and/or objectives and needs.

Currently, no agency is able to quantify the cost of potential monkey damage to the island of Puerto Rico. However, most conservationists agree that to lose a species to extinction, whether it is caused by non-native monkeys or man, can not be compared to any economic value. A species is considered invaluable or irreplaceable.

Issue 18: ***The proposed methods of control are cruel, ethically unacceptable, and will cause severe injury and undue pain and suffering.***

Program Response 18: As described in the EA (Sections 2.2.4 - Humaneness of Control Methods; Section 2.2.6 - Effects on the Aesthetic Values of Targeted Species and Protected T&E Species), WS recognizes that people have wide and varying opinions and beliefs regarding WS use of control methods. WS personnel are experienced and professional in their use of management methods so that they are as humane as possible under the constraints of current technology and funding. Standard Operating Procedures used to maximize humaneness are listed in Chapter 3 of the EA.

The WS program is concerned about animal welfare and continuously evaluates existing and new methods because of our concern for animals. While it is regrettable that wild animals die to alleviate some damage, we believe that if an animal death must occur, then it should occur with a minimum amount of distress and pain, in as short period of time as practical, and with compassion. The American Society of Mammalogist (Baker et al. 1987) states that, "*Field methods used to sacrifice mammals should be quick, as painless as possible, and compatible with ... the size and behavior of the species of mammal under investigation.*"

Humaneness, in part, is a person's perception of harm or pain inflicted on an animal, and people may perceive the humaneness of an action differently. The issue of humaneness and animal

welfare, as it relates to the killing or capturing of wildlife is an important and very complex concept that can be interpreted in a variety of ways. Schmidt (1989) indicated that vertebrate pest damage management for societal benefits could be compatible with animal welfare concerns, if "*. . . the reduction of pain, suffering, and unnecessary death is incorporated in the decision making process.*" Suffering is described as a "*. . . highly unpleasant emotional response usually associated with pain and distress.*" However, suffering "*. . . can occur without pain . . . ,*" and "*. . . pain can occur without suffering . . .* " (AVMA 1987). Because suffering carries with it the implication of a time frame, a case could be made for "*. . . little or no suffering where death comes immediately . . .* " (CDFG 1991), such as shooting.

Defining pain as a component in humaneness of WS methods appears to be a greater challenge than that of suffering. Pain obviously occurs in animals. Altered physiology and behavior can be indicators of pain, and identifying the causes that elicit pain responses in humans would "*. . . probably be causes for pain in other animals . . .* " (AVMA 1987). However, pain experienced by individual animals probably ranges from little or no pain to considerable pain (CDFG 1991).

The AVMA states "*... euthanasia is the act of inducing humane death in an animal*" and "*... the technique should minimize any stress and anxiety experienced by the animal prior to unconsciousness.*" (AVMA 2001). Some people would prefer AVMA accepted methods of euthanasia to be used when killing all animals, including wild and feral animals. The AVMA states that "*For wild and feral animals, many of the recommended means of euthanasia for captive animals are not feasible. In field circumstances, wildlife biologists generally do not use the term euthanasia, but terms such as killing, collecting, or harvesting, recognizing that a distress-free death may not be possible.*" (AVMA 2001).

The decision-making process involves tradeoffs between the above aspects of pain and humaneness. Therefore, humaneness, in part, appears to be a person's perception of harm or pain inflicted on an animal, and people may perceive the humaneness of an action differently. One challenge with coping with this issue is how to achieve the least amount of animal suffering within the constraints of current technology and resources. WS has improved the selectivity and humaneness of management techniques through research and development. Research is continuing to bring new findings and products into practical use. Until new findings and products are found practical, a certain amount of animal suffering could occur when some wildlife damage management methods are used in situations where non-lethal damage management methods are not practical or effective.